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DEUTSCHE NORM

October 1989

Pipe joint assemblies and fittings for high-density polyethylene (PE-HD) pressure pipes
Injection-moulded fittings for butt welding
Dimensions

DIN 16963 Part 6

Rohrverbindungen und Rohrleitungsteile für Druckrohrleitungen aus Polyethylen hoher Dichte (PE-HD);
Fittings aus Spritzguß für Stumpfschweißung, Maße

Dimensions in mm

1 Field of application

This standard specifies requirements for injection-moulded [1]) polyethylene (PE-HD) fittings to be joined with pipes as specified in DIN 8074 by heated tool butt welding as described in DIN 1910 Part 3 or DVS 2207 Part 1. These fittings shall also comply with the requirements specified in DIN 16963 Part 5.

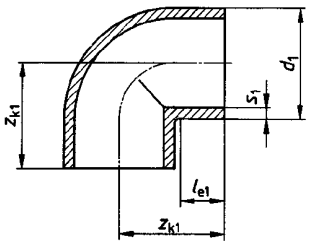
For technical reasons, the fittings shall only be welded to pipes conforming to DIN 8074 and to fittings of the same pipe series, the use of other fittings being permitted if the nominal wall thickness in the jointing zone of the components is the same.

2 Dimensions and designation

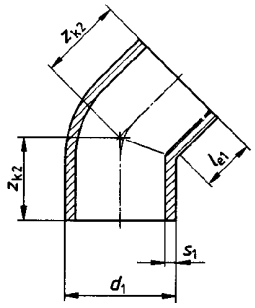
Fittings are not expected to conform to the designs illustrated here; compliance is only required in the case of the dimensions specified.

The limit angular deviations shall be $\pm 2°$.

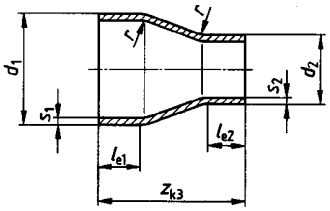
90° elbow



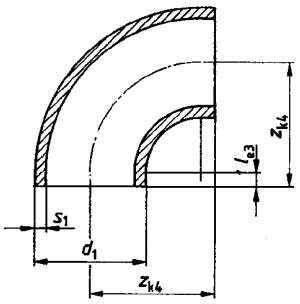
45° elbow



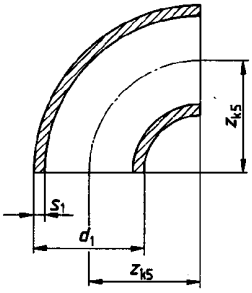
Reducer



90° bend, type A



90° bend, type B



[1]) See DIN 16700 for definition of 'injection moulding'.

Continued on pages 2 to 4

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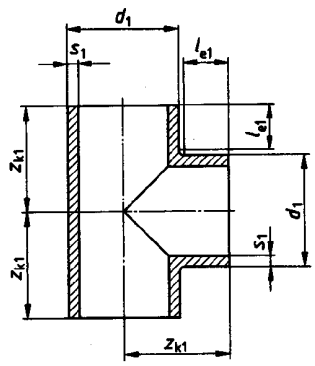
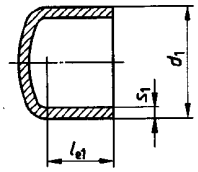
Tee



Cap



Designation of a 90° elbow as specified in this standard (6), with $d_1 = 63$ mm, to be joined with PE-HD pipes of pipe series 5:

Elbow DIN 16963 – 6 – 90 – 63 – 5 PE-HD

Designation of a reducer as specified in this standard (6), with $d_1 = 63$ mm and $d_2 = 50$ mm, to be joined with PE-HD pipes of pipe series 4:

Reducer DIN 16963 – 6 – 63 × 50 – 4 PE-HD

Designation of a type A 90° bend as specified in this standard (6), with $d_1 = 63$ mm, to be joined with PE-HD pipes of pipe series 5:

Bend DIN 16963 – 6 – 90 A – 63 – 5 PE-HD

Table 1. **Dimensions of elbows, bends, tees and caps**

d_1[2)]	l_{e1} min.	l_{e3} min.	Wall thickness, s_1 Pipe series 2 PN 3,2	3 PN 4	4 PN 6	5 PN 10	6 PN 16	z_{k1} min.	z_{k2} min.	z_{k4} min.	z_{k5} min.
20	5	2	–	–				20	14	21	19
25	6	3	–	–				25	17	26	23
32	8	4	–	–				32	22	34	30
40	10	5	–					40	26	43	38
50	12	5						50	33	53	48
63	16	5						63	41	66	61
75	19	6						75	49	78	72
90	22	6			See DIN 8074 for wall thickness and associated limit deviations.			90	57	93	87
110	28	8						110	70	115	107
125	32	8						125	79	130	122
140	35	8						140	88	145	137
160	40	8						145	95	165	157
180	45	8						155	100	184	176
200	50	8						170	110	204	196
225	55	10						220	140	231	–
250	60	10						220	156	256	–
280	70	10						250	175	286	–
315	80	10						275	198	261	–

[2)] Identical with the outside diameters (and limit deviations) specified in DIN 8074.

Table 2. **Reducer**

Reducer diameters					Wall thicknesses, s_1 and s_2					
					Pipe series					
		l_{e1}	l_{e2}	r	2	3	4	6	z_{k3}	
d_1 [2]	d_2 [2]	min.	min.	min.	PN 3,2	PN 4	PN 6	PN 10	PN 16	min.
25	20	6	5	5	–	–				30
32	20	8	5	5	–	–				30
32	25	8	6	5	–	–				30
40	20	10	5	5	–	–				40
40	25	10	6	5	–	–				40
40	32	10	8	5	–	–				40
50	25	12	6	5	–	–				50
50	32	12	8	5	–					50
50	40	12	10	5						50
63	32	16	8	8	–					60
63	40	16	10	8	–					60
63	50	16	12	8						60
75	40	19	10	8	–					65
75	50	19	12	8						65
75	63	19	16	8						65
90	50	22	12	8						75
90	63	22	16	8						75
90	75	22	19	8						75
110	63	28	16	10						90
110	75	28	19	10						90
110	90	28	22	10						90
125	75	32	19	10						100
125	90	32	22	10						100
125	110	32	28	10						100
140	90	35	22	10						110
140	110	35	28	10						110
140	125	35	32	10						110
160	110	40	28	10						120
160	125	40	32	10						120
160	140	40	35	10						120
180	125	45	32	15						130
180	140	45	35	15						130
180	160	45	40	15						130
200	140	50	35	15						135
200	160	50	40	15						135
200	180	50	45	15						135
225	160	55	40	20						160
225	180	55	45	20						160
225	200	55	50	20						160
250	180	60	45	20						175
250	200	60	50	20						175
250	225	60	55	20						175
280	200	70	50	20						200
280	225	70	55	20						200
280	250	70	60	20						200
315	225	80	55	20						225
315	250	80	60	20						225
315	280	80	70	20						225

See DIN 8074 for wall thickness and associated limit deviations

For [2], see table 1.

Standards and other documents referred to

DIN 1910 Part 3	Welding of plastics; processes
DIN 8074	High-density polyethylene pipes; dimensions
DIN 16700	Plastics; moulding technique; processing methods and tools; concepts
DIN 16963 Part 5	Pipe joint assemblies and fittings for polyethylene (PE-HD) pressure pipes; general quality requirements and testing
DVS 2207 Part 1[3])	*Schweißen von thermoplastischen Kunststoffen; PE hart (Polyethylen hart); Rohre und Rohrleitungsteile für Gas- und Wasserleitungen* (Welding of thermoplastics; unplasticized polyethylene (PE); pipes and fittings for gas and water conduits)

Other relevant standards

DIN 8075	High-density polyethylene (PE-HD) pipes; general quality requirements and testing
DIN 16963 Part 1	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; gusseted bends for butt welding; dimensions
DIN 16963 Part 2	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; gusseted tees and branches produced by necking, for butt welding; dimensions
DIN 16963 Part 3	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; pipe bends for butt welding; dimensions
DIN 16963 Part 4	(at present at the stage of draft) Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; nipples for heated tool butt welding, flanges and gaskets; dimensions
DIN 16963 Part 7	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; injection-moulded electric fusion fittings; dimensions
DIN 16963 Part 8	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; injection-moulded elbows for socket welding; dimensions
DIN 16963 Part 9	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; injection-moulded tees for socket welding; dimensions
DIN 16963 Part 10	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; injection-moulded sockets and caps for socket welding; dimensions
DIN 16963 Part 11	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; bushes, flanges and gaskets for socket welding; dimensions
DIN 16963 Part 13	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; turned and pressed reducers for butt welding; dimensions
DIN 16963 Part 14	Pipe joint assemblies and fittings for types 1 and 2 high-density polyethylene (PE-HD) pressure pipes; injection-moulded reducers and nipples for socket welding; dimensions
DIN 16963 Part 15	Pipe joint assemblies and fittings for high-density polyethylene (PE-HD) pressure pipes; pipe couplings; dimensions

Explanatory notes

Jointing of PE-HD fittings with each other or with PP pipes as specified in DIN 8074 by welding shall be effected with the aid of welding fixtures. The dimensions of such fittings have been specified so as to permit them to be properly held in these fixtures. By virtue of their design, type A and B 90° bends cannot properly be held in normal welding fixtures; therefore, use of special clamping devices is required.

International Patent Classification

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E 03 B 7/00

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[3]) Obtainable from *DVS Verlag GmbH*, Postfach 27 25, D-4000 Düsseldorf 1.